

PROCEEDINGS OF THE CLUB

MEETING OF FEBRUARY 20, 1935

The meeting was called to order at The New York Botanical Garden at 3:30 P.M. by President Hazen. There were twenty-four present.

Minutes of the meetings of January 16 and February 5 were read and approved.

The following were unanimously elected to membership in the club: Miss Clair A. Brown, Botany Dept., L. S. U., Baton Rouge, La.; Mr. George Buckland, 849 Stanley Street, Schenectady, N. Y.; Mr. Leo A. Hanna, 1603 Second Street, Baker, Ore; Mrs. Helen Holmes Bancroft, 2 Wellington Square, Oxford, England; Prof. Charles B. Lipman, 3048 Life Science Building, University of California, Berkely, Cal.; Mr. W. T. McLaughlin, Fisk Hall, Northwestern University, Evanston, Ill.; Mr. Earl H. Newcomer, 2523 Ridge Road, Berkeley, Cal.; Mrs. Ruth Patrick Hodge, Biology Dept., Temple University, Philadelphia, Pa.; Prof. George B. Rigg, Botany Dept., University of Washington, Seattle, Wash.; Mr. C. M. Roberts, Dept. of Biology, Fairmont Teachers College, Fairmont, W. Va.; Prof. C. O. Rosendahl, Dept. of Botany, University of Minnesota, Minneapolis, Minn.; Dr. Francis J. Scully, 904 Medical Arts Building, Hot Springs, Ark.; Dr. William C. Steere, Botany Dept., University of Michigan, Ann Arbor, Mich.; Miss Vivian Trombetta, Barnard College, New York City; Prof. Ralph H. Wetmore, Biological Laboratories, Divinity Avenue, Cambridge, Mass.; Mr. G. Wittrock, New York Botanical Garden, Bronx Park, New York, N. Y.

The resignations of Mrs. Ellys Butler Moldenke, Mr. George L. Harrington, Mr. Henry Jacoby, Miss Ruth A Connolly, and Dr. Walter T. Swingle were accepted with regret.

The death of Mrs. Elizabeth B. Davenport was reported. Mrs. Davenport, who lived to be ninety years old, was a member in the club for many years. Although she had been totally blind for four or five years she kept up her membership in the Club in order to help by her dues.

A suggestion was made that we adopt a plan of having a

brief biographical report on members who have died. Dr. Howe moved that the chairman be authorized to appoint a committee of three, Dr. Barnhart chairman, to present a plan on how such a scheme as this might be carried out. The motion was seconded and passed.

Dr. S. M. Pady of The New York Botanical Garden gave an illustrated lecture on "Infection Studies on the Orange Rusts of *Rubus*."

FORMAN T. MCLEAN
Secretary

MEETING OF MARCH 5, 1935

The meeting was called to order at the American Museum of Natural History at 8:15 P.M. by President Hazen. There were 40 present.

The following were unanimously elected to membership in the club:

Mr. Nathaniel R. Lubowe, Thomas Knowlton Junior High School, New York, N. Y.; Miss Mildred S. Narins, 1010 Bryant Avenue, New York, N. Y.; Dr. J. W. Severy, Department of Botany, Montana State University, Missoula, Mont.; Mr. Meyer L. Gottlieb, 1920 Harrison Avenue, New York, N. Y.

The resignation of Dr. W. D. Hoyt was accepted with regret.

Dr. E. D. Merrill, Director of The New York Botanical Garden gave a short talk on "Two Early Collections of Plants from New York State."

Dr. F. E. Denny of the Boyce Thompson Institute gave an interesting talk on "Effect of Chemicals on the Life Activities of Plants." This was illustrated by lantern slides.

FORMAN T. MCLEAN
Secretary

MEETING OF MARCH 20, 1935

The meeting was held at The New York Botanical Garden, at 3:30 P.M., with twenty three present.

Minutes of the meetings of February 20 and March 6 were read and approved.

The following were elected to membership: J. P. Anderson, Box 530, Juneau, Alaska; Prof. Frank T. McFarland, Botany

Dept., University of Kentucky, Lexington, Ky.; Mr. James B. McNair, 818 South Ardmore Avenue, Los Angeles, Calif.; Mr. George B. Rosebach, 97 Church Street, Waltham, Mass.

The resignations of Mrs. John T. Fetherston of New York and Miss Gardis B. Thayer of Philadelphia, were accepted with regret.

The first paper on the scientific program was on "The Tumor producing Organism—*Bacterium tumefaciens*" by Dr. Michael Levine of the Montefiore Hospital. The author's abstract follows:

The bacterium which induces tumors or cancer growths on plants has been known since 1911. The organism is a rod-shaped cell which may be cultivated on a variety of media but appears to grow best on a decoction or soup made of white beans.

When this organism is introduced into a plant through wounds produced experimentally by pricking it with a needle or through wounds made accidentally by garden implements as in the cultivation of the soil, the plant becomes infected. In a short time, depending upon the plant, an overgrowth of tissue in the injured region results, which has been called crown gall or plant cancer. Cacti which have been studied recently show a long latent period in tumor formation. The giant tree cactus and the southern *Opuntias* produce galls experimentally in about a year after inoculation. The galls grow for a relatively long period, although the joints on which they are formed may show partial necrosis.

The organism which is responsible for these tumor growths in plants undergoes characteristic changes which may be associated with changes in their ability to secure food.

It has been mentioned above that *Bacterium tumefaciens* is a rod-shaped organism measuring $1.5\ \mu$ to $3\ \mu \times .5\ \mu$ to $.75\ \mu$. A smear taken from a culture of this organism, grown on bean broth agar and stained, shows these typical rods after two days. Subsequent smears made at daily intervals for a period of three to four months, show that the organisms diminish in size. At two months or earlier ghost cells are observed with a number of granular bodies. Examination of these cultures three or four months later, even after the agar is dry and the colonies of bacteria seem to have disappeared, shows these granular bodies. When these bodies are transferred to fresh agar the rod-shaped

structures again reappear in two days, and measure and behave like the organisms in the original culture. It has been shown that *Bacterium tumefaciens* can withstand drying and overwintering in the field. The granular bodies which they form appear to enable them to survive these adverse conditions. These bodies, while not recognized as spores morphologically, nevertheless seem to have some of the physiological characteristics of spores.

An organism which produces spore-like bodies has been found associated with *Bacterium tumefaciens*. It is mildly infectious and tumor-producing. It grows abundantly without visibly changing the character of the colony and produces spore-like bodies in three to six days.

The second paper, entitled "Bricks and Bubbles" was by Dr. R. P. Wodehouse of the Arlington Chemical Company. Following is the author's abstract:

It is generally conceded that the tetrakaidecahedron is the solid with the smallest surface area which is capable of partitioning space, and it is the form which soap bubbles in masses assume, and which the cells of many plants and animal tissues tend to assume. Under the conditions prevailing in these circumstances the tetrakaidecahedron is therefore, the ideal building block.

The artizan, however, never uses such a building block in the construction of walls and columns; for his purpose it would be eminently unsuited. Instead, experience has taught him that the ideal unit of construction for his purpose is a rectangular block about twice as broad and three times as long as high. Both kinds of building blocks are equally well adapted to the use to which they are put; the uses, however, are different. In the former case the block is required to sustain stresses which are equal in all directions, while in the latter it is required to sustain stresses which are unequal, since they are the result of the vertical thrust of gravity, with little or no pressure in any other direction. It may, therefore, be said that the tetrakaidecahedron is the building block of equal lateral stresses, while the rectangular, brick-shaped hexahedron is the building block of unequal lateral stresses.

MARSHALL A. HOWE
Secretary *pro tem.*